

## Chapter 11 – Environmental Mitigation

The Dixie MPO recognizes that transit, road, and trail projects all bring positive and negative impacts on natural and built environments. Therefore the MPO strives to establish steering and stakeholder committees to guide early corridor planning studies. Committees are comprised of resource agencies, land managers, environmental groups, developers, and others who consider impacts to air quality, farmland, fish and wildlife, historical/archeological resources, geologic hazards, floodplains, water quality, and wetlands.



While corridor planning requires only a broad consideration of potential environmental impacts – a more detailed analysis is required as each project advances into the Environmental Assessment (EA) or Environmental Impact Statement (EIS) phase prior to project construction. Following is a discussion of potential environmental issues that require analysis of impact, concern, avoidance, or mitigation remedies:

### Impacts

#### Farmland Impacts

Preservation of farmland is increasingly difficult in the Dixie Region. The shrinking availability of land, incentives to sell and give way to development, and the area's harsh desert environment are combining to reduce the supply of farmable land within the Dixie MPO planning boundary. Incentives for jurisdictions to protect and preserve farm environments may not be strong enough to overcome these market forces that are driving a growth in population and consuming once farmable land for commercial and residential use.

#### *Fish and Wildlife Impacts*

The following table presents federally threatened and endangered species, and State sensitive species found throughout the Dixie Region. Although these species are identified for long range planning purposes and early corridor preservation studies, a more detailed investigation of impacts, avoidance, or mitigation is required at the Environmental Assessment or Environmental Impact Statement stages of environmental analysis.

Federally Listed Species in Washington County, Utah

Threatened(T), Endangered(E), and Candidate(C) Species

This list was compiled using known species occurrences and species observations from the Utah Natural Heritage Program's Biodiversity Tracking and Conservation System (BIOTICS); other federally listed species likely occur in Utah Counties. This list includes both current and historic records. (Last updated on January 12, 2012)\*\*.

Common Name	Scientific Name	Status
Plants		
Siler Pincushion Cactus	<i>Pediocactus sileri</i>	Threatened
Shivwits or Shem Milkvetch	<i>Astragalus ampullarioides</i>	Endangered
Holmgren Milkvetch	<i>Astragalus holmgreniorum</i>	Endangered
Gierisch Mallow	<i>Sphaeralcea gierischii</i>	Candidate
Dwarf Bearclaw-poppy	<i>Arctomecon humilis</i>	Endangered
Reptiles/Amphibians/Fish		
Virgin Chub	<i>Gila seminuda</i>	Endangered
Woundfin	<i>Plagopterus argentissimus</i>	Endangered Candidate
Relict Leopard Frog	<i>Rana onca</i>	Extirpated
Desert Tortoise	<i>Gopherus agassizii</i>	Threatened
Birds		
Greater Sage-grouse	<i>Centrocercus urophasianus</i>	Candidate
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Candidate
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Threatened
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	Endangered
Mammals		
Utah Prairie-dog	<i>Cynomys parvidens</i>	Threatened
Gray Wolf	<i>Canis lupus</i>	Endangered Threatened
Brown (Grizzly) Bear	<i>Ursus arctos</i>	Extirpated

\*\* Created by the Utah Division of Wildlife Resources - January 12, , 2012

Note: Please contact the U.S. Fish and Wildlife Service (801-975-3330) for the purpose of consultation under the Endangered Species Act.

### ***Historical/Archeological Impacts***

Historical and archeological sites are other components that are not easily measured, but add character and quality of life in the Dixie Region. Avoidance, mitigation, and restorations are options to consider as planned solutions reach the environmental analysis phase.

Although the Dixie Region has not been completely surveyed for archaeological resources, the MPO boundary areas are likely to contain numerous archaeological sites.

The ancestral Southern Paiute are believed to have moved into this region sometime between AD 1000 and 1300. They were hunters and gatherers who practiced a seasonal round of resource collection and processing over a broad and diverse landscape. In southern Utah, however, some Southern Paiute groups became small-scale farmers and diverted water from the Virgin and Santa Clara Rivers and other smaller streams to cultivate garden plots. Euro-American explorers to this region, including Dominguez and Escalante in 1776 and Jedidiah Smith in the 1820s, reported seeing irrigation ditches and small check dams constructed by the Southern Paiute to divert water from the rivers and streams onto their fields of corn, beans, and squash. A Southern Paiute site, located on private land near the study area, was excavated by archaeologists from Brigham Young University in the 1980s. This site contained evidence of maize cultivation that dated to AD 1700 and 1830 (Allison 1988).

As part of the NEPA process, consultation will be required with Native American tribes that may have an interest in the study area. Final determination of tribes to include in the consultation process will be made during the NEPA process. The tribes with interest in the study area include the Hopi Tribe; the Navajo Nation; the Paiute Indian Tribe of Utah and its Shivwits, Cedar, Indian Peak, and Kanosh Bands; the Uintah/Ouray Ute; the Las Vegas Paiute; the Moapa Paiute; and the Kaibab Paiute.

Few surveys of historic resources have occurred within the study area. Historic resources in the study area relate to the 18th and 19th century Euro-American explorations. In 1776, two Franciscan priests from New Mexico, Dominguez and Escalante, traveled through southern Utah looking for an overland route to the Spanish colonies in California. This travel route came to be known as the Old Spanish Trail. The main branch of the Old Spanish Trail followed the Santa Clara River south from Mountain Meadows and then veered to the west over the low pass of Utah Hill (old Highway 91). In 2001, the Old Spanish Trail was designated as a National Historic Trail.

By the early 1850s, the first colonies were being established by members of the Church of Jesus Christ of Latter-day Saints (Mormons) in southern Utah. Some of the structures built by these colonies may be found in the study area; these structures include irrigation systems along the Santa Clara and Virgin Rivers and sites associated with stock animals.

### ***Geologic Hazards***

The geologic diversity within the State of Utah is well known and much of that diversity and topographical constraint exists in Dixie. The region is not immune to earthquakes, rock fall, landslides or volcanoes. Due to recent area events, rock fall hazards have become an increasing concern for area planners and constructors. Rock fall information can be



obtained by visiting the Utah Geological Survey website (<http://www.geology.utah.gov/utahgeo/hazards/landslide/index.htm>). The MPO encourages transportation solutions to take in to account the known geologic hazards in plans, designs, and construction to prevent, avoid, or mitigate as much as possible current, ongoing, and future geologic events.

### **Water-body and Floodplain Modification**

Washington County in cooperation with FEMA and other agencies has produced an updated floodplain plan to deal with the aftermath of the January 2005 Flood in Dixie and to prevent and control floodwaters in future significant storm events. This plan is available at the offices of Washington County. Recently FEMA has developed new Digital Flood Insurance Maps that greatly assist planning around and through flood plain areas. These and other maps are available at the FEMA web site or through any of the Washington County City offices that participate in the Federal Flood Insurance Program. There is also the newly formed Washington County Flood Control Authority which is a intergovernmental body that now deals with regional flood control issues within the county. Transportation needs solutions/projects must be planned designed and built with these requirements and conditions in mind.

### **Water Quality Impacts**

Water quality can be greatly impacted by the amount of hard surfaces (including roadways) in a region. Hard surfaces lead to polluted runoff instead of the water table's natural percolation cycle. Most of the larger communities within the MPO boundaries participate in the Utah Pollutant Discharge Elimination System (UPDES) programs. These programs administered through the Utah Department of Environmental Quality (DEQ) are designed to reduce or eliminate pollutants from surface runoff in conjunction with the EPA Clean Water Act.

### **Wetland Impacts**

Wetlands provide an invaluable resource to our ecosystem. Section 404 of the Clean Water Act protects wetlands from development without a permit issued by the Army Corps of Engineers. Designing the roadways to protect the wetlands within the Dixie Region is in accordance with the requirements of the Clean Water Act and leads to a more sustainable community. A local office of the Army Corps of Engineers has been established and is available for further information.

### **Climate Change**

While local discussions of climate change effects are minimal within the Dixie MPO more and more attention is being directed within the state concerning this issue. MPO executives and planners regularly discuss flood control plans and recognize the need to construct roads and bridges to accommodate heavy runoff volumes and to facilitate the local needs for drainage; however climate change may also have an effect on this and other aspects of transportation. Flooding events in 2005 and 2011 stimulated local awareness of potential hydrology concerns in a changing environment and validated the need to over-plan bridge facilities and other flood treatments within the flood plains and waterways of Southwestern Utah. Changes in temperature, precipitation and extreme weather events have the potential to negatively affect the populations throughout the MPO.

A document titled "Climate Change and Public Health in Utah" provides an accessible overview and description of the influence of environmental factors on climate change and health in Utah. Many identified indicators could have an effect on how transportation is looked at and planned in the future.

## Air Quality

Washington County, Utah, is currently considered an attainment area as defined by the Clean Air Act and therefore is not regulated by the EPA or the Utah Division of Air Quality. However, proper planning will be required if the region reaches non-attainment status in the coming years or if EPA regulations are tightened. In non-attainment status, plans to reduce personal automobile dependency would become vital. Although there are many sources of air pollution, including ambient air moving in from other parts of the region, auto emissions, vapor gases, and dust are common contributors to air pollution locally. Mode/trip decisions, reducing single occupancy vehicles, improving traffic flow and recovering gaseous vapors are some of the ways to protect the quality of air. These and other strategies will be looked at and recommended to local governments for their consideration and adoption. The Dixie area has been growing rapidly for many years and will continue to grow to build out conditions, and must look seriously at protecting its air shed quality.

The MPO anticipates continued growth in vehicle miles of travel, and the associated congestion and traffic delays. Some societal tendencies are catching hold toward the use of energy efficient vehicles, and alternate modes of transportation such as bicycles, but the potential for air quality problems, especially for Ozone, is real for Utah's Dixie.

Ozone is the primary cause of summer air pollution. It is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOx) mix with sunlight and heat. Ozone is a mix of chemicals emitted mainly from vehicle tailpipes, diesel engines and other smoke emitting plants. Often referred to as "smog" is a problem when temperatures are high and daylight hours are long. On hot summer days it can lead to shortness of breath, chest pains and lung inflammation.

The consequences of allowing air quality to deteriorate to the point of exceeding pollutant standards, is costly. Besides the human health impacts and costs that are well documented, once an area is labeled a 'non attainment' area for pollutants, meaning it cannot maintain air quality to acceptable standards, federally funded improvements to transportation systems are restricted. Additional state and federal regulatory actions are then placed over an area increasing the cost to do business, to plan, and to implement projects. Needed federal funding may also be curtailed or withheld if attainment measures are not met.

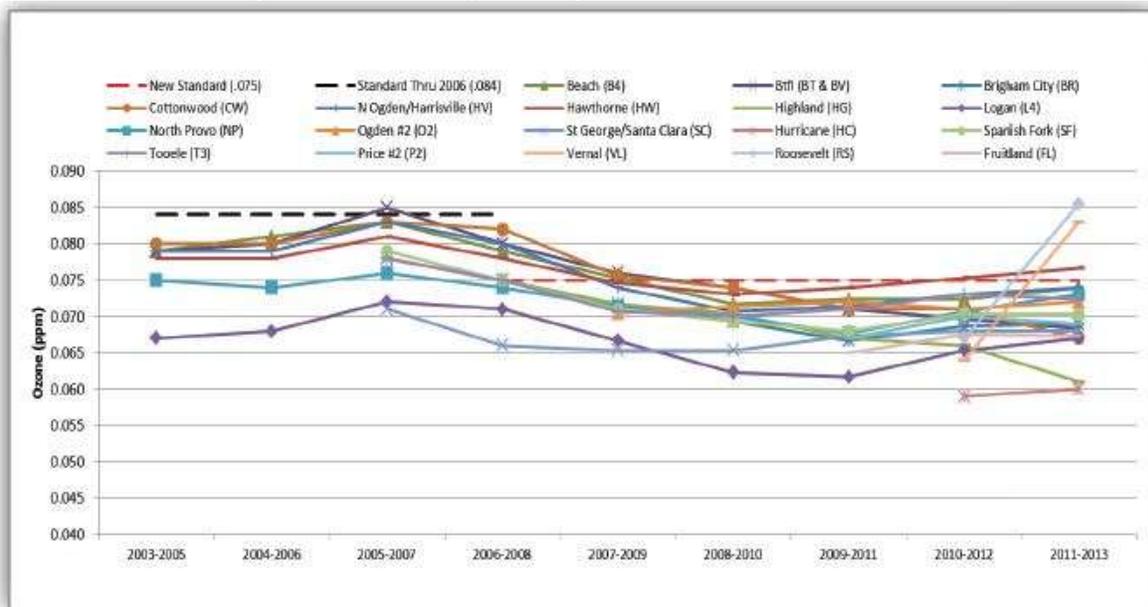
The DAQ has conducted a summer ozone study in 2012, titled "2012 Utah Ozone Study" and is involved in the Western Air Quality Studies in looking at ozone transport and background values. One of the conclusions in the 2012 study suggests that there is broad regional transport of ozone. The study noted that "high ozone concentrations in rural Utah were potentially influenced by regional transport of ozone, springtime emissions of biogenic volatile organic compounds, stratospheric ozone intrusion and wildfire smoke." For the full study visit the DAQ Division of Air Quality web site.

The Division of Air Quality and the Department of Environmental Quality have offered to help the Dixie area avoid this situation, or postpone it for as long as feasible, and will encourage Congress to deal more fairly with areas that are experiencing ambient Ozone from outside sources. DAQ strongly recommends that the Dixie area do all that it possibly can on a voluntary basis in taking reasonable and cost effective measures to protect the air shed.

The State Division of Air Quality (DAQ) reports the status of local air quality. DAQ staff reported that an air quality monitoring station was in place in St. George from July of 1995, through the end of 1997. According to data gathered during that period, although no pollutants exceeded the current standards

at that time, new Ozone standards that were being implemented by the EPA were approached during April/May of 1996 and 1997. In 2008, another air quality monitoring station was established in Santa Clara with similar results as illustrated in the graph below. Currently the Santa Clara monitoring station has been replaced with a station in Hurricane City as the DAQ continues to monitor air quality in the area. Much of the data is available on the DAQ website at: <http://www.airquality.utah.gov/news.htm>. The DAQ has also published its Annual Monitoring Plan for 2014 which includes the Hurricane monitoring station (HC) as part of the program. The State has future plans to start monitoring for ozone at a location in Iron County that is yet to be determined.

Figure 3-Year Average 4th Highest 8-Hour Ozone Concentration



DAQ staff made recommendations to the DTAC to consider developing a voluntary action plan to protect the air shed. Air shed protection is managed at the county level by DAQ.

To be proactive, the DTAC prepared a draft protection plan, and facilitated a locally funded short term Ozone study. SECOR, an air quality-engineering firm, was chosen from a number of submitted proposals and began monitoring from a station placed on Washington County Annex property near the location of the original DAQ monitoring site. Data from this six-month study, conducted from May 2002, through October 2002, did not exceed the then current Ozone standards. However, the Ozone levels were slightly higher when compared to the 1995 - 97 DAQ data. Also, data available from a permanent monitoring site in Mesquite, Nevada shows very similar Ozone concentrations to St. George, according to SECOR. These studies, together with other data from the southwestern region of the US, show that Ozone levels approaching .08 ppm are prevalent regardless of urbanized status. The results of the SECOR study is available for review at the Dixie Transportation Planning Office, Five County Association of Governments, 1070 W. 1600 S., St. George, UT 84770.

Ozone standards were changed in 2010, but subsequently stayed on appeal of a law suit.

In January 2010 EPA proposed stricter standards for smog. As part of EPA's extensive review of the science, the Clean Air Scientific Advisory Committee (CASAC) was asked for further interpretation of the epidemiological and clinical studies they used to make their recommendation. To ensure EPA's decision is grounded on the best science, EPA is said to have reviewed the input CASAC provided before the new standard is selected. Given this ongoing scientific review, EPA intended to set a final standard in the range recommended by the CASAC by the end of July, 2011.

EPA was under a court order to propose a new standard by Dec. 1, 2014. On December 17, 2014, a proposed rule for National Ambient Air Quality Standards for Ozone was published. As of this writing, EPA has held three public hearings and received comments until March 17, 2015. This proposed rule is scheduled to be finalized by Oct. 1, 2015. EPA is proposing to revise the primary standard level to within the range of 65 -70 ppb and the secondary standard to within the same range.

According to the rule, by October 1, 2016, the state will recommend the designation for all areas of the state. By June 1, 2017, EPA responds to the states' initial recommendations and identifies where the agency intends to modify the recommendations. By October 1, 2017 EPA will issue final area designations. By 2020 to 2021 the state is to complete development of implementation plans outlining how they will reduce pollution to meet the standards. Between 2020 to 2037, the state would be required to meet the primary standard, with deadlines depending on the severity of an area's ozone problem. The Clean Air Act does not specify a deadline for the state to meet secondary standards. The state and EPA determine that date through the implementation planning process.

The DAQ has commented that: "in a nutshell, any change to any level in the proposed range will likely result in the violation of the standards and a designation of a non-attainment status for the bulk of the state."

The standard levels of acceptable Ozone were .075 ppm prior to the 2010 proposal. The proposed rule change would bring that level down to .065 ppm to .070 ppm. At the lower levels, if approved, it is projected that the MPO and surrounding areas will likely become non-attainment. According to DAQ information, regional Ozone levels close to the new standard are being seen at monitoring sites throughout the southern Utah region, from Four Corners, into the Grand Canyon, Zion National Park, Dixie and southern Nevada. DAQ also suggests that a local condition is occurring in springtime such that when vegetation begins to green up and temperatures are rising, the combination of emissions of nitrogen oxides (N Ox) and volatile organic compounds (VOC) contribute to ozone formation, and should be included in the scope of emissions inventory and non regulatory monitoring efforts.

### ***Action Plan***

The DAQ will continue non regulatory air pollution monitoring in Dixie with the intent of determining local pollution levels for several pollutants, but to especially focus on Ozone. The geographic scope will be the entire County of Washington.

Guidelines are available under EPA's Ozone Flex Program for areas concerned about potential future non attainment of either the 1 hour or 8 hour ozone standards, to achieve emission reductions, secure public health benefits, and accrue possible credits to future planning efforts, to the extent allowed by the Clean Air Act and EPA guidance or rules. The Ozone Flex Air Program is a voluntary approach to maintain attainment of the NAAQS for ground-level Ozone. Implementation of voluntary control measures in the Flex plans may help areas to avoid violating the 8-hour ozone air quality standard,

improve air quality, and provide public health benefits. More work and investigation will be needed here to determine if this program would be appropriate for the MPO area.

**Prevailing Winds** in Dixie tend to move from the southwest in a northeasterly direction, almost on a daily basis. This air movement helps to change the air, to 'refresh it', on a regular basis. However, the same prevailing winds are likely to carry contaminated air from nearby urban areas like, Las Vegas, or even from the Los Angeles Basin, into and through Dixie. Truckers who drive the I-15 Corridor on a regular basis are convinced of this relationship. Of course, anyone may have an opinion, but empirical results would be needed to determine the relationship and to affect public policy. Efforts are being made by the DAQ and others to document these ozone transport relationships. Lack of empirical results may limit the ability to change community health standards by affecting public policy. The DMPO partners agree to:

- Cooperate and coordinate with DAQ and other local stakeholders in developing and implementing a regional scope of work for non regulatory monitoring in Utah's Dixie
- Encourage use of mobile monitoring equipment to help determine local and regional Ambient source contributions
- Participate in pollutant source inventorying and sharing other data, as needed  
(See Appendix C for typical pollution source list)

**Traffic Congestion** is a contributing factor to the level of air quality due to an increase in pollutants, as vehicles progress slowly and are queued up at intersections for long cycle lengths. Vehicles that are idling emit more pollutants than when operating at optimum speed, which is around 30mph. Delay time at specific intersections as well as along routes is an indicator of Congestion. Another indicator may be average road link speeds that fall below 15 mph. If feasible, speed data may be available or determined that will be useful in making traffic flow impact decisions. The Dixie MPO and its partners recommend the following (non-prioritized) transportation strategies for local government consideration and action:

- Encourage Intersection Flow improvements & Traffic Signal synchronization
- Consider one way streets where feasible
- Maintain capacity, speed, and function of arterial /collector roads & corridors
- Encourage business and industry to establish Flexible employee work hours
- Encourage placement of fiber conduit in all new construction or rehabilitation projects for future ITS strategies
- Encourage municipal purchase of unused buried conduit
- Support mobility management efforts such as van pooling
- Plan appropriately to reduce overall delay hours
- Improve transit operations to provide more opportunities to leave vehicles at home
- Continue to maintain and update the Traffic Demand Model in providing useful data pertinent to air quality
- Encourage local governments to prepare corridor management plans and signal coordination plans to reduce delays and congestion.

**Municipal Corporation Policy** varies throughout Dixie as to visible efforts to improve air quality. St. George City for example, has executed resolutions such as tree planting, especially in parking lots, which reduces vapor emissions from automobile gas tanks; encourages non polluting industry; supports and operates public transit; and has had a goal of having a bicycle/pedestrian trail within 15 minutes of

every home. Communities in the region are all actively supporting paths and trails and their connectivity. The Dixie MPO encourages the following, (non-prioritized), strategies for local government support and action:

- Landscaping/tree planting strategies, especially for parking lots
- Fleet Vehicle fueling in cool hours of the day
- Covering all solvent tanks or open storage of vaporous gases/liquid
- Encourage non polluting industry
- Encourage any polluting industry to apply modern emissions technology
- Encourage Volatile Organic Compounds (VOC) recovery at all fueling stations
- Encourage fleet vehicle preventive care as recommended by manufacturers
- Encourage and support van and car-pooling of employees -
- Support regional Public Transit
- Encourage fleets that use alternative fuels (incentives available)
- Support Walk-able Communities and neighborhoods (land use, zoning, codes)
- Support MPO Long Range Plans, Policy, and Standards in local development decisions
- Encourage all municipalities to implement a "Complete Streets" plan and policy
- Investigate the possibility of providing free vehicle emissions testing to help concerned citizens reduce vehicle emissions

**Private/Public Partnerships** can go a long way in encouraging business and citizen contributions to air quality protection. Encourage the Chambers of Commerce to partner with local business, colleges, and industry to support similar protection measures as listed above.

#### **Dixie MPO Work Plan:**

1. Participate with DAQ and local partners in non regulatory monitoring
2. Create Public/Private Education Program
  - Distribute information to and through:
    - Chamber of Commerce members
    - Municipalities
    - Washington County
    - Public Agencies
    - Schools, College
    - Neighborhood organizations
    - Coverage in local newspapers
    - Newsletters
3. Include Air Quality Protection strategies in the Long Range Transportation Plan
4. ITS technology should be reviewed and appropriate, effective tools implemented when feasible and affordable.
5. Assist DAQ in emissions inventory of sources of potential pollutants
6. Seek voluntary action consistent with prevention or control of related emissions
7. Seek funding for local action planning from the Environmental Protection Agency

#### **Air Quality Task Force:**

The Southern Utah Air Quality Task Force was formed in 1996. The first challenge was to address fugitive dust issues in the St. George area. Since its creation the Task Force has been encouraged to

address many additional air quality matters such as air quality monitoring, agricultural and range fire smoke, motor vehicle emissions, and application of pesticides and herbicides. Many have been concerned about the potential for transfer of air pollution from the Los Angeles and Las Vegas areas.

The purpose of the Task Force is:

- To work together to prevent future non-compliance with air quality
- To support and conduct non-partisan research, education, and informational activities to increase public awareness of air quality concerns and solutions
- To achieve communication within industry, communities and government representatives; and to sustain air quality values

The goal of the Task Force has been to encourage community awareness and involvement. They currently meet monthly and hold an annual Air Quality Summit to educate the public and community leaders about air quality issues affecting this area. The group generally meets the third Wednesday of every month at 10:00 a.m. at the Association of General Contractors of Utah office in St. George.

## **Integration of NEPA into the Planning Process**

While the above elements are important components of the natural and built environment in the Dixie Region, and each deserves their own thoughtful and comprehensive analysis. This plan does not attempt to perform a comprehensive Environmental Analysis or Environmental Impact Statement as regulated by National Environmental Policy Act (NEPA). At this point, projects included in this plan are for planning and modeling purposes only. Some projects amount to little more than a proposed line on a map. It is not intended to identify specific alignments for planned corridors. When a formal proposal is made, the NEPA process will follow.

## **Unified and Cooperative Planning Processes**

In 2009, public and private planners throughout Utah began creating the unified planning tool “U-Plan” – a web-based information platform designed to allow road and utility planners to jointly access information on rights-of-way, infrastructure lines, environmental concern areas, habitat areas, and other built and natural resources. The Dixie MPO views U-Plan as an integral tool within the transportation planning process and encourages outside agencies to participate.

## **Objective and Goals**

The Dixie MPO recognizes that there are many environmental challenges throughout its planning boundary that must be considered when planning and constructing regional transportation corridors. As a result, a number of strategies have been identified throughout this chapter.

### *Objective*

The DMPO understands the need to consider these environmental challenges in the planning stages and will strive to incorporate environmental solutions into its planning process.

### *Goals*

1. To support the environmental processes associated with requirements for federally funded projects.
2. To become more aware of the historical and geological issues of the area.
3. Commission necessary studies and investigations to support the planning process.
4. Stay abreast of changes in environmental requirements throughout the planning area and specifically those related to air quality with special emphasis on ozone.
5. Support the plans, strategies, and Task Force identified in this chapter.
6. Be committed to the DMPO work plan as described above.

